Progress Report

FOR THE YEAR ENDED JUNE 1957

ROYAL ONTARIO MUSEUM

DIVISION OF ZOOLOGY AND PALAEONTOLOGY

ROYAL ONTARIO MUSEUM

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PROGRESS REPORT

FOR THE YEAR ENDED JUNE 1957

C O N T E N T S

S T A F F

(Part-time assistants and student-assistants are not listed)

Non-departmental

F. A. Urquhart, M.A., Ph.D., Head

Miss M. Easto, Secretary

Miss E. R. McClure, Chief Librarian

R. R. Hornell, Chief Technician (Palaeozoology)

E. H. Taylor, Chief Technician (Zoology)

G. Pyzer, Attendant and Storekeeper

Department of Vertebrate Palaeozoology

L. Sternberg, Associate Curator

G. Edmund, M.A., Ph.D., Assistant Curator

Miss E. N. Hammell, Research Assistant

Department of Mammalogy

R. L. Peterson, Ph.D., Curator

S. C. Downing, B.A., Research Assistant

Department of Ornithology

L. L. Snyder, Curator

J. L. Baillie, Research Assistant

Department of Ichthyology and Herpetology

W. B. Scott, Ph.D., Curator

E. B. S. Logier, Associate Curator

E. J. Crossman, M.A., Ph.D., Assistant Curator (from July 1, 1957)

[illegible]

Part-time assistants and student-assistants [illegible]

Departmental

[illegible]

Miss M. Martin, [illegible]

Miss [illegible]

[illegible] Librarian

[illegible] Chief [illegible] Pathobiology

[illegible] Chief Technician (Zoology)

[illegible] Typist, Mimeograph and Storekeeper

Department of Agricultural Biochemistry

[illegible] Storekeeper, Associate Director

[illegible], M.A., Ph.D., Assistant Director

Miss [illegible], Research Assistant

Department of Entomology

K. L. Peterson, Ph.D., Director

[illegible] C. Beckett, [illegible], Research Assistant

Department of Parasitology

[illegible] Director

[illegible] Research Assistant

Department of Ichthyology and Herpetology

[illegible] Scott, Ph.D., Curator

[illegible] Keister, [illegible] Curator

[illegible] Crossman, [illegible] Assistant Curator (from July 1, 1969)

Department of Invertebrate Palaeozoology

R. R. H. Lemon, Ph.D., Assistant Curator (from July 1, 1957)

J. Monteith, Research Assistant

Department of Invertebrate Zoology

G. B. Wiggins, M.A., Assistant Curator

E. M. Walker, M.B., F.R.S.C., Honorary Curator

Department of Art and Exhibits

T. M. Shortt, Chief

A. Reid, Associate Chief

A. Gatti, Artist

INTRODUCTORY REMARKS

This report was prepared primarily for the Director and members of the Board of the Royal Ontario Museum and is considered as a "progress report" rather than an "annual report."

This report will also serve to inform our colleagues in other institutions about our research work, the growth of our research collections, and gallery displays.

I am pleased to announce the employment of two additional curators on our staff: Dr. R. R. H. Lemon, Assistant Curator in charge of the research collection in the Department of Invertebrate Palaeozoology; and Dr. E. J. Crossman, Assistant Curator in the Department of Ichthyology and Herpetology.

Although primarily responsible for administration, the person occupying the position of Head must carry on his own research as time permits. Progress concerning such research is outlined under the appropriate department, in this case under the Department of Invertebrate Zoology.

Owing to the reorganization of the Department of Invertebrate Palaeozoology, it has not been possible to include a statement from that Department in the present report.

F. A. Urquhart

DEPARTMENT OF VERTEBRATE PALAEOZOOLOGY

by L. Sternberg

The Associate Curator's preparation of the skull of Parksosaurus warreni (formerly Thescelosaurus) has revealed a row of teeth which up until now had been unknown. This preparation was done as a part of the Assistant Curator's research on ornithischian teeth. Further preparation has also been done on a skeleton of the Permian reptile Edaphosaurus. Although moulds and casts of the skull, jaws, pelvis, and other missing parts of this reptile have now been completed from material borrowed from another institution, considerably more work remains before final assembly of the skeleton can be made. Additional casts of some of the Department's dinosaur skulls have been made by the Associate Curator for exchange or sale. Considerable progress has been made in the indexing of publications in the departmental library, and revised copies of our exchange list of duplicate separates have been sent to other workers.

The Assistant Curator submitted a portion of his studies on tooth replacement in reptiles as a thesis to Harvard University and received his Doctor of Philosophy degree. Work on tooth replacement in crocodilians is being continued and radiographs of the dentition of living animals are being taken at monthly intervals. These studies of reptilian tooth replacement are now being prepared for publication. A study of the special foramina in the jaws of certain ornithischian dinosaurs has been completed and a paper submitted for publication in the Division's Contribution series. Several addresses were given by the Assistant Curator during the past year: a paper on tooth replacement

[illegible]

[illegible] the revising [illegible] library, [illegible] copies of [illegible] exchange list [illegible]

The Assistant [illegible] supplies [illegible] distribution of [illegible]

[illegible] monthly intervals. [illegible] for publication, [illegible] discussions [illegible] for pub- [illegible] Division's contributions [illegible] addresses were given [illegible] assistant [illegible] during [illegible]

in reptiles to the Ontario Society of Biologists; a talk on dinosaur hunting in western Canada at the Museum's "Dinosaur Night"; a talk on the evolution of the horse to the Arabian Horse Breeders' Association of Canada. He also assisted in the preparation of a C.B.C. television programme on dinosaurs. A part of the University course, Ecology and Evolution, Zoology 3a, was presented by the Assistant Curator.

Both curators attended the annual meetings of the Society of Vertebrate Palaeontologists held at the American Museum of Natural History in New York. Reports were given on the activities of the Department and an informal talk was given by the Assistant Curator on tooth replacement in reptiles.

Noteworthy additions to the collection over the past year include a pair of jaws from a young mammoth, taken near Dawson City, and presented by F. G. Magee of Toronto. Also received were the skull and most of the skeleton of the Permian amphibian Eryops along with casts of the Permian reptile Dimetrodon in an open exchange agreement from the Museum of Comparative Zoology of Harvard University.

The use of the Department's collections and facilities was again extended to various persons and organizations. The jaws of a small hadrosaurian dinosaur were loaned to Dr. Wann Langston Jr. of the National Museum of Canada. Dr. L. S. Russell of the National Museum of Canada spent a week in the Department examining specimens from the collection for his study of the titanotheres of the Cypress Hills of Saskatchewan. Mr. John Ostrom of Columbia University spent three days in the Department gathering material for his own research. Other visiting palaeontologists included Mr. G. F. Sternberg, Teachers' State College,

Kansas; Mr. C. M. Sternberg, formerly of the National Museum of Canada and now retired; Dr. Wann Langston Jr., National Museum of Canada; Mr. Louis Thaler, of France, now studying at Columbia University. A collection of duplicate fossil material and a number of models were prepared for shipment to Dr. R. S. Bader of the University of Illinois for teaching purposes. A cast of a dinosaur skull was sent to the National Museum of Canada in an open exchange, and a second cast was sold to the Cleveland Museum of Natural History. Specimens and models were loaned to the C.B.C. for use on two television programmes.

New gallery exhibits presented during the past year include the skull of an almost perfect Cretaceous crocodile along with that of a modern crocodile. A temporary exhibit of three cases showing the hunting weapons and some remains of early man was also installed.

DEPARTMENT OF MAMMALOGY

by R. L. Peterson

During the past year research emphasis has been placed on accumulating distributional records and other data for a treatise on the mammals of eastern Canada. Preliminary research was also completed on the variation in the red squirrel, Tamiasciurus hudsonicus, in eastern Canada. During the fall considerable time was devoted to "Hunters' Night" for which a booklet entitled Ontario's Big Game - The Deer Family was prepared and published.

Studies of the genus Phenacomys were continued by Mr. J. B. Foster, a graduate student in the University of Toronto, at Churchill, Manitoba, during the summer. The Curator also visited Churchill for consultation with Mr. Foster on this project, and made a reconnaissance trip to Southampton Island and Melville Peninsula where a small collection of lemmings was made. A portion of the results of the Phenacomys research was completed and presented by Mr. Foster as a thesis entitled The Cranial Development and Life History of Phenacomys ungava, in conformity with the requirements for the Master of Arts degree in the University of Toronto.

Studies of cranial variation in the genus Vulpes were continued by Mr. C. S. Churcher, a graduate student, who was able to complete a draft of his thesis which will be submitted in conformity with the requirements for the degree of Doctor of Philosophy in the University of Toronto.

The Curator conducted the mammal portion of a course, Zoology 25, for the Department of Zoology, University of Toronto. He served on graduate examining committees, and spent considerable time consulting with graduate students.

During the year 347 specimens were received, 97 by staff collecting and 250 by donation. Approximately 1,000 specimens were catalogued and processed into the research collections. Important collections of Newfoundland mammals were contributed by Mr. D. H. Pimlott of the Newfoundland Department of Mines and Resources. Contributions to our collection of known-age red foxes were made by the following: J. E. McCague, Alliston, Ontario; George A. Callbeck, Summerside, Prince Edward Island; Lloyd Clapp, Elberts, Ontario; D. C. Lamond, Strathroy, Ontario; and H. Bollert, Simcoe, Ontario. Other important material was contributed by Mr. J. L. Jorgensen, Three Rivers, Quebec, and by the Ontario Department of Lands and Forests.

Loans to other institutions and service to other organizations and individuals continued at a high level and included the identification of a large series of several hundred small mammals for the Ontario Department of Lands and Forests taken in a province-wide survey.

The Curator attended the annual meeting of the American Society of Mammalogists, at Higgins Lake, Michigan, where he was again re-elected as Recording Secretary. He also served as a judge for the Thomas Adams Big Game Competition, and participated in radio and television programmes dealing with mammals.

DEPARTMENT OF ORNITHOLOGY

by L. L. Snyder

Although the Department's programme has not included staff field collecting for some years, an increment of specimen material for the research collection accrues annually as a result of public interest and opportune action on the part of the staff. Of the 136 bird specimens received in the flesh during the year, a selection of 45 was retained as skins and 35 as skeletons. The Ontario Department of Lands and Forests serves as a most fruitful source for miscellaneous specimens, since their staff is somewhat cognizant of our desiderata and fully aware of the ornithological significance of any available specimen. We are indeed grateful for their cooperation and for the mutual friendly relations which exist between the staff of this Provincial Department and that of the Museum.

The more noteworthy accessions during the year, through donation, exchange, purchase, and staff collecting, are as follows: Donations - a series of 15 aged juvenile Blue Grouse from Vancouver Island by Dr. James F. Bendell, University of British Columbia, Vancouver; a collection of 99 skins, mostly from London, Ontario, by Prof. N. R. Brown, University of New Brunswick, Fredericton, N.B.; a collection of 25 skins from Alberta and British Columbia by Mr. O. D. Boggs, Calgary, Alberta; a Passenger Pigeon from the estate of Mr. George E. Rose through his daughter Mrs. F. P. Dodds, of Picton, Ontario; a Passenger Pigeon from Misses E. and L. M. Harris, of Port Perry, Ontario, through the good offices of Mr. Paul Hahn, of Toronto; two Passenger Pigeons presented by Mr. Don Inman, of Grand'Mère, Quebec; a collection of 36 skins from Nyasaland, Africa, by Mr. Charles Long, of Toronto. Exchanges - an assortment of skins of large birds

from Europe received from the State Museum of Natural History, Stuttgart, Germany. Purchases - 6 skins from Paramaribo, Surinam (Dutch Guiana), 4 representing genera new to our collections; 14 skins from Argentina, most of which represent forms new to our collection. Staff collecting - a nest, four juvenile plumage hybrids and their parents (a male Blue-winged Warbler and a female Golden-winged Warbler) collected by Mr. J. L. Baillie near Milton, Ontario; a male European Widgeon collected by Mr. A. Gatti at Port Credit, Ontario, the third preserved specimen of this species from Ontario.

The Department's reference collection of nests and eggs, important both with respect to revealing avian characters and in establishing breeding status geographically, is now, for the first time, in a satisfactory and usable condition. The collection totals some 7,500 lots or items. Cataloguing is now complete by the addition of some 3,000 cards this year. This task was carried out by Mrs. Kathryn Cody, an experienced assistant available through extra-clerical funds. Mr. J. L. Baillie, Research Assistant of the Department, has put in order the entire range of 23 oology cabinets. Unfortunately, and this is a growing problem, cabinet and floor space will not contain 166 lots which constitute the end of the series. Only by selective discarding and reordering the whole, can this remainder be housed, and this ignores provision for the future. A total of 322 bird skins and skeletons was catalogued by the Research Assistant. He has also personally or through clerical assistance kept the master maps on bird distribution in the province up to date with current specimens and literature. He has also continued extensive re-arrangement in the bird room cabinets (120 cabinets, from Falconiformes to Strigiformes) a task imposed by congestion.

Although the foregoing is entirely related to research, activities more directly concerned with this phase of museum work includes the Curator's continued studies concerned with the production of an Ontario ornithologists' manual. Procedure during the year has carried the first draft of the work through Ciconiiformes and Anseriformes to the Diving Ducks. He has also been concerned with seeing a book through press, Arctic Birds of Canada, a contribution to the science of birds as well as constituting literature useful to a wider audience than ornithologists.

Rendering assistance to other researchers has been our privilege as usual. Specimens of *Empidonax* flycatchers (15) were loaned to Dr. William Behle of the University of Utah, and a specimen of *Parus elegans* from the Philippines was loaned to Dr. Kenneth C. Parkes of the Carnegie Museum of Pittsburgh. Mrs. Margaret Mitchell, a volunteer worker at the Museum, has used the Department's collections, literature, and other facilities to prepare a book on her observations of birds in Brazil. Other ornithologists who have used the reference collection in the bird room are, Mr. Charles Long of Toronto and Nyasaland, Dr. David Scott of the University of Western Ontario, and Mr. Richard Sutton of the Manitoba Museum, Winnipeg. Literature on the food habits of insectivorous birds was searched out and discussed with Dr. Douglas Davies and a student from McMaster University. Live specimens were critically examined for a local bird bander.

The ornithological portion of the University course, Zoology 25, was given by the Curator as usual. He also gave two lectures to a General Course class, Zoology 3a. By special arrangement, an exchange student at the University, Miss Sarah Plimpton, has been given instruction and guidance in museum work and in conducting a study of variation in *Bombycilla cedrorum*. A seminar was held for

a class in game management from the Ontario Agricultural College.

There has been considerable activity in public relations and services during the year. Mr. Baillie has given a total of twenty-seven lectures and talks including radio and television appearances. Services include specimen identification for Federal Customs and the loan of specimens to an artist working in British Columbia. Mr. Baillie acted as an expert witness for the R.C.M.P. in a court case in Windsor and served on the publicity committee for the Museum's "Hunters' Night." The staff has provided information on request to radio and television stations and the local press. Numerous personal requests, by telephone and letter, have been given attention.

The staff has continued its support of local and international organizations concerned with their field of interest. The Curator attended the 74th Stated Meeting of the American Ornithologists' Union held in Denver and took part in the business sessions of that Society.

DEPARTMENT OF ICHTHYOLOGY AND HERPETOLOGY

by W. B. Scott

As a result of the plans and organization which were put into effect almost ten years ago, the collections and work of this Department have become more widely known than ever before. Contacts with Canadian universities, research institutions, and governmental agencies, have resulted in a flow of specimens of our Canadian fish fauna into the research collections, specimens which otherwise might have been wasted. The mere possession of such material is not, in itself, cause for rejoicing, but it is confidently expected that study of this material, and publication of such studies in the years to come, will increase immeasurably our knowledge and understanding of this animal group. It should be emphasized that these collections are not solely for staff use but are available at all times to other institutions for study purposes. The Museum is the repository for specimens held in trust and maintained in good condition. The quality and number of publications written by the Museum staff is one measure of the extent to which the collections are used. Loans to other institutions are, of course, another measure of use.

Approval of the appointment of an Assistant Curator in Ichthyology was granted this year, and Dr. E. J. Crossman has agreed to accept this position. The collections will now be put to greater use than ever before.

During the period covered by this report, specimens for study purposes have been loaned or donated to the following institutions: Biological Bureau, University of Montreal, Quebec; Fisheries Research Board of Canada, Biological Station, Winnipeg, Manitoba; Institute of Fisheries, University of British Columbia,

Vancouver, B.C.; Museum of Zoology, University of Michigan, Ann Arbor, Michigan; Natural History Museum, Stanford University, Stanford, California; Zoological Institute, Academy of Sciences, Leningrad, U.S.S.R.

Material for the study collections has been received from the following organizations and individuals:

Ontario Department of Lands and Forests, Toronto (J. Armstrong, C. Armstrong, N. S. Baldwin, J. Christie, R. G. Ferguson, J. Price, J. Budd).

Ontario Department of Planning and Development (K. H. Mayall).

University of Toronto, Toronto (B. Foster, B. Muir, D. Paim).

McGill University, Montreal (D. R. Oliver, G. Power).

University of Saskatchewan, Saskatoon (D. S. Rawson, F. M. Atton).

University of British Columbia, Vancouver (C. C. Lindsey, E. J. Crossman).

Canadian Wildlife Service, Ottawa (J. P. Cuerrier, E. H. McEwan).

Fisheries Research Board of Canada (E. Cox, L. R. Day, A. Fleming, J. J. Keleher, G. H. Lawler, R. A. McKenzie).

Museum of Zoology, University of Michigan, Ann Arbor (R. M. Bailey).

United States Fish and Wildlife Service, Juneau, Alaska (N. J. Wilimovsky).

Scripps Institute of Oceanography, La Jolla, California (W. L. Klawe).

In addition to the above, Mr. Leon Schram, a Lake Erie commercial fisherman, sent to the Museum an 18 pound specimen of sucker, representing a species not previously recorded from Canada. To all these individuals we are extremely grateful for their interest and generosity.

Although many specimens have been received by donation, exchange, and staff collecting, the total number of lots catalogued this year has been reduced to 300 (6,700 specimens) because of the emphasis placed on the preparation of distribution maps for a forthcoming publication.

In the field of public service, fishes have been identified for the following: Ontario Departments of Lands and Forests, Planning and Development, and Health; Manitoba Department of Mines and Natural Resources; Saskatchewan Department of Natural Resources; Fisheries Research Board of Canada; and the Canadian Wildlife Service. In addition, the curators have participated in several radio and television broadcasts. The Associate Curator addressed a convention of Medical Officers of Health on the subject of poisonous snakes.

Both curators have been actively cooperating with this Division's Department of Art and Exhibits in planning a new reptile gallery. In this connection, the Curator was given the responsibility of organizing an expedition to Trinidad, B.W.I., consisting of F. A. Urquhart, T. M. Shortt, A. Gatti, and W. B. Scott, the purpose of the expedition being to collect material for the new gallery. The trip, made in May and June, 1957, was highly successful owing in no small part to the cooperation of the Trinidad Government and the advice and assistance of Mr. W. King-Webster and Mr. J. S. Kenny of the Trinidad Fisheries Department.

A checklist of the freshwater fishes of Canada was prepared by the Curator and is ready for publication. This is part of a project on the freshwater fishes of Canada which will be published in book form. The preparation of distribution maps for this latter publication has progressed very favourably, owing in part to a grant of 700 dollars by the Toronto Anglers' and Hunters' Association for extra-clerical assistance to aid in the preparation of approximately 200 maps. Mr. James Woodford, extra-clerical assistant, has worked solely on this project during the year.

A manuscript on the reptiles of Ontario was completed and submitted for publication by the Associate Curator who is now continuing work on a manuscript dealing with the reptiles of eastern Canada.

Both curators participated in the presentation of the University course, Zoology 25.

The Curator attended the annual meeting of the American Society of Ichthyologists and Herpetologists at New Orleans, in which Society he serves on the Board of Governors; and attended the annual meeting of the American Fisheries Society, in Toronto, in which Society he serves on the Names Committee. This committee, under the chairmanship of Dr. Reeve M. Bailey of Michigan, is preparing a new list of common and scientific names of fishes of the United States and Canada, for publication in 1958. As a director, the Curator also attended the annual meeting of the Ontario Council of Commercial Fisheries. The meeting of the Canadian Committee for Freshwater Fisheries Research, held annually in Ottawa, was also attended, as was the meeting of the South Bay Laboratory Advisory Committee held near Parry Sound, Ontario.

D E P A R T M E N T O F I N V E R T E B R A T E Z O O L O G Y

by G. B. Wiggins

Volume Two of the Honorary Curator's monograph, The Odonata of Canada and Alaska, will deal with the families Aeshnidae, Petaluridae, Gomphidae, and Cordulegastridae. Manuscript revisions on these four families are now complete and the illustrations, consisting of about fifty plates, are nearly finished. It is hoped that Volume Two will be published in the near future. A paper on the affinities of the North American species of Gomphus, mentioned in last year's report, was published this year as Number 46 of the Division's Contribution series. Students of dragonflies have been divided on the nature and limits of the subdivisions of this large and, in many ways, puzzling genus. In this work a more satisfactory classification of the North American species of Gomphus was obtained through a study of the genitalia, chiefly the male organs, correlated with other characters of both adults and larvae.

The Assistant Curator's work on Trichoptera was again largely devoted to a study of the phylogeny of the Phryganeidae of the world. More than half of the species accounts and figures were completed. This study will align into a consistent classification the widely scattered elements of the family and will make it possible for the first time to study the evolution and geographic dispersal of the whole group. In addition, the identification and distribution of all of the species known will be covered. As part of these studies, two shorter papers were completed and published in the Contribution series of this Division during the past year. The first was a revision of the North American caddisfly genus Banksiola. The second, a study of the caddisfly genus Oligotricha in Japan, was prepared in co-operation with Dr. Satoru Kuwayama of the Hokkaido National

Agriculture Experiment Station, Japan. Two other papers completed in the preceding year were also published this year. Field work on the limnephilid genus Neophylax was continued with a collecting trip through parts of Quebec, New Hampshire, and Vermont, in September. Several species were added to the collection for the first time and many new Canadian distribution records were obtained.

As mentioned in the introductory remarks of this report, progress in research by the Head of this Division is outlined under the appropriate department. Most of Dr. Urquhart's time for research has been devoted to organizing and writing up the results of his work on the Monarch Butterfly, as well as to continuing his own field studies. Field observations and tagging have been continued by the large number of cooperators throughout North America. A temporary assistant, Miss Hilda White, has given valuable assistance with the very large amount of correspondence arising from the work of these cooperators and with many other matters contributing to the preparation of the final manuscript. Dr. Urquhart continued to serve as a member of the Council of the Society of Systematic Zoology and attended the annual meeting in New York. He also attended the annual meeting of the Lepidopterists' Society in New York and presented a short paper. In all, thirty-four addresses were given during the past year, including one to the Royal Canadian Institute, in Toronto, dealing with studies of the Monarch Butterfly and with the work of the Museum. Dr. Urquhart served on a number of committees for graduate students in the University and also presented a portion of a course, Zoology 25. Several radio and television appearances were also made.

Dr. Walker, Honorary Curator, was appointed an Honorary Vice-President of the Tenth International Congress of Entomology held at Montreal in August, 1956. The Congress adopted as its official insect emblem the primitive orthopteroid

insect Grylloblatta campodeiformis, first discovered by Dr. Walker in Alberta in 1914. The Curator and Assistant Curator both attended the Congress and were pleased to welcome a number of the delegates to the Museum before and after the sessions. Dr. Walker was also honoured by his appointment as an Honorary Member of the Entomological Society of America.

One of the most important accessions of the past year was a collection of largely unidentified Trichoptera of the late Dr. Nathan Banks of the Museum of Comparative Zoology. This material was turned over to the Department by Dr. W. L. Brown of the Museum of Comparative Zoology, Harvard University. Trichoptera material important for research problems in progress was presented by Dr. Syoziro Asahina of Tokyo, Japan, and by Mr. V. Crichton of the Ontario Department of Lands and Forests.

Collections of Odonata and Trichoptera from Saskatchewan and Manitoba were presented by Dr. D. S. Rawson of the University of Saskatchewan. Mr. F. C. J. Fischer of Rotterdam, Holland, has again loaned rare books from his own library and aided in procuring other publications. Mr. M. G. Gedeonoff of the Museum staff has given freely of his own time to assist in the translation of Russian books and periodicals.

One of the important functions of museum collections is that they can be utilized by research workers, wherever they may be. This year, as in the past, portions of the Department's collections have been loaned to various persons and institutions throughout North America.

DEPARTMENT OF ART AND EXHIBITS

by T. M. Shortt

The main project of the Department during the past year has been the planning of a Gallery of World Reptiles. Floor plans, overall gallery design, and subject content of the individual exhibits have now been determined, and work on the exhibit will commence in the fall of 1957. In connection with this project T. M. Shortt accompanied by E. B. S. Logier, Associate Curator of Ichthyology and Herpetology, paid a week-long visit to the American Museum of Natural History and the Bronx Zoo in New York to discuss the gallery with New York herpetologists and the American Museum display staff. A. Reid visited the Chicago Museum of Natural History and the Chicago Museum of Science and Industry and for several days discussed exhibition and preparation techniques with the staffs of those institutions. From mid-May to mid-June T. M. Shortt and A. Gatti accompanied by F. A. Urquhart and W. B. Scott took part in a field trip to Trinidad, British West Indies, to secure specimens of tropical reptiles and accessory materials for use in the new gallery. Specimens of Bushmaster, Fer-de-lance, Boa Constrictor, Tree Boa, rear-fanged snakes, and other reptiles, were collected. Invaluable assistance in every phase of its work was given to this field party by Mr. J. S. Kenny of the Department of Fisheries, Trinidad.

During the past year several special exhibits were prepared. Eight temporary exhibits of particular interest to sportsmen were prepared for "Hunters' Night." A feature exhibit on this occasion was a display of ancient and modern firearms in the third floor art alcove. This exhibit traced the development of the gun from the 16th century matchlock to the finest of modern hunting weapons and was

made possible through the loan of many fine pieces by the Royal Ontario Museum's Division of Art and Archaeology, Mr. D. M. Blyth, Mr. James Balmer, Mr. J. H. Crang, Mr. James Gooding, the Modern Gun Shop, and Adams Distillers (Ont.) Ltd. Also prepared for this occasion were exhibits showing the wide colour variation of the Ruffed Grouse throughout Canada; the races, varieties, and mutants of the Ring-necked Pheasant; the growth of deer and moose as traced through the emergence and development of the teeth; the differences between horns and antlers of big game mammals; an embryonic moose, one inch long; the trophies and awards offered by Adams Distillers (Ont.) Ltd. to deer hunters; a selection of books about game and hunting, including recent works loaned by local publishing houses, along with some of the hunting and shooting classics.

On April 9, "Anglers' Night," three special shows were opened to the public. One was a display in the art alcove which demonstrated the step-by-step manufacturing process of fishing rods and lures, with material loaned by Allcock, Laight and Westwood Ltd. The second was an exhibition of original water colour paintings of freshwater fishes which were executed for reproduction in Life magazine by Mr. Maynard Reece. These were loaned by the artist. The third was a book show on sport fishing combining some of the earliest works with the very wide variety of modern books.

Another special exhibition held in the third floor art alcove was the premiere showing in eastern North America of water colour paintings of birds by Fenwick Lansdowne, brilliant young artist from British Columbia. This exhibition was arranged under the joint auspices of the Museum and the Audubon Society of Canada.

In contrast to last year relatively little illustration work was done this year. Four maps were prepared for Mrs. Mitchell's Observations on the Birds of

Southeastern Brazil. Black and white drawings were made for Museum booklets, 4 for Dr. Peterson's Ontario's Big Game - The Deer Family, and 10 for Mr. Baillie's Ontario Grouse.

Two fishes of importance were received and casts of them have been made for future use. One was an Inconnu or Shee-fish received from the Canadian Department of Fisheries and the other was a splake, a hybrid (Speckled Trout x Lake Trout) received from the Ontario Department of Lands and Forests.

L I B R A R Y

by E. R. McClure

During the year 2,851 publications were received and catalogued, bringing the total holdings of the library to 90,465.

New exchanges were established with several institutions, among which were the Association Canadienne-Francaise pour l'Avancement des Sciences, the Zoological Institute, U.S.S.R., the All-Union Palaeontological Society, U.S.S.R., and the Slovak Academy of Science. Such exchanges are of special value in the zoological field as they make conveniently available to Canadian zoologists literature dealing with holarctic forms and, of special importance, literature dealing with certain elements of the Canadian fauna.

Emphasis has been placed during the past year on building up the collections of literature dealing with Trichoptera and Vertebrate Palaeozoology, and many publications in these fields have been obtained. The extensive collection of papers on Odonata from the library of Dr. E. M. Walker was incorporated into the library.

Special activities of the library included the arrangement of an exhibit of books on angling as part of Anglers' Night and the collation of the third edition of R. Brookes' six-volume work A System of Natural History for inclusion in a bibliography of early books on natural history by Dr. G. A. Lisney of England. Dr. Lisney informs us that this is the only copy of the third edition he has been able to trace.

In keeping with the policy of the Division of Zoology and Palaeontology to have a central cataloguing system in cooperation with the main library of the University of Toronto, so that our publications are readily available to the

entire staff and student body of the University, it is planned to add to our central catalogue cards covering all the publications in the palaeontological library.

CHIEF TECHNICIANS

The Chief Technician in Palaeozoology, R. R. Hornell, devoted most of the time during the year to the preparation of fossil material for research purposes. This preparation, consisting usually of the removal of the covering rock from fossilized animal remains, is one of the most time consuming and tedious tasks in museum work. Two Museum departments, Vertebrate and Invertebrate Palaeozoology, are served by the Chief Technician.

For the Department of Vertebrate Palaeozoology several of the specimens collected by the Museum expedition of 1954 to Alberta have now been prepared. These include two turtles, several parts of hadrosaur dinosaurs, and a number of other separate bones. The skull, neck, and parts of the fore limbs of a crested duck-billed dinosaur have been completely prepared and are now ready for study. Several other sections have been opened and exposure of these is being continued. A second hadrosaur skull was also made ready for study and will be subsequently exhibited in the gallery. Considerable time was also spent on a specimen of a Triassic reptile, Typothorax, obtained in exchange from Harvard University.

For the Department of Invertebrate Palaeozoology several fossils were removed from rock. Fifteen thin sections of fossils were made. Seven latex moulds of invertebrate fossils were made and these were used to prepare casts for exchange.

The Chief Technician spent three days in the Department of Vertebrate Palaeontology of the American Museum of Natural History in New York, learning about latest techniques in the preparation of vertebrate fossils.

The Chief Technician in Zoology, E. H. Taylor, is in charge of the preparation for study purposes of all zoological specimens coming into the Museum. Because of the special techniques involved in the preparation of mammal and bird specimens for research, most time is spent on behalf of these two departments.

For the Department of Mammalogy, the following material was prepared: 625 skulls; 32 skeletons; 41 skins, including 9 tanned skins. Special attention was given during the past year to a backlog of large mammal skeletons with the result that 1 whale, 6 moose, 9 caribou, and various other large specimens, were made ready for the research collection.

For the Department of Ornithology 39 skins and 35 skeletons were prepared for study purposes. Six skeletons were prepared for the Department of Ichthyology and Herpetology.

Use of the Museum's colony of dermestid beetles was extended to the Ontario Department of Lands and Forests to clean about 250 beaver skulls for research purposes. Also, more than 100 small mammal skulls were cleaned for Dr. D. A. Smith of the Department of Zoology, University of Toronto. Instruction in the methods of preparation of specimens for study was given to three students.

The maintenance of the gallery aquaria was supervised by the Chief Technician, and special displays were prepared for the two Museum Open Nights. The Chief Technician also assisted in preparing mammal and bird displays for "Hunters' Night."

STAFF PUBLICATIONS

BAILLIE, J. L. The lower Humber Valley (with Park News, June, 1945, Pp. 2).

_____ Ontario Grouse (Royal Ontario Museum, Division of Zoology and Palaeontology, 1956, Pp. 20 (portion on Ruffed Grouse reprinted in Bancroft Times, Dec. 6 and 13, 1956)).

_____ On the spring flight of Blue and Snow Geese across northern Ontario (Canadian Field-Naturalist, vol. 69, no. 4, Oct.-Dec., 1955, pp. 135-139).

_____ Changes in Ontario's birdlife in the past 35 years (Toronto Field-Naturalists' Club Newsletter, no. 145, Jan. 1957, pp. 1-7 (reprinted in Audubon Outdoors, no. 74, Feb. 3, 1957, Pp. 7)).

_____ (Review) William Saunders and his five sons: the story of the Marquis Wheat family, by Elsie Pomeroy (Federation of Ontario Naturalists, Bulletin no. 75, 1957, pp. 36-37).

_____ Christmas bird census for 1955 - Toronto, Ont. (Canadian Field-Naturalist, vol. 70, no. 2, 1956, pp. 89-90).

DOWNING, S. C. The northern forest mammals (Canadian Nature, vol. 18, no. 5, 1956, pp. 178-180).

_____ Mammals of the Arctic (Canadian Nature, vol. 19, no. 1, 1957, pp. 10-12).

PETERSON, R. L. Ontario's big game. The deer family (Royal Ontario Museum, Division of Zoology and Palaeontology, Nov., 1956, Pp. 16).

PETERSON, R. L. and S. C. Downing

Distributional records of the opossum in Ontario (Journal of Mammalogy, vol. 36, no. 3, 1956, pp. 431-435).

SCOTT, W. B. (McKenzie, R. A. and W. B. Scott) Silver Hake, Merluccius bilinearis, in the Gulf of St. Lawrence (Copeia, no. 2, 1956, p. 111).

_____ (Review) The fishes of western Arctic America and eastern Arctic Siberia, by V. Walters (Copeia, no. 3, 1956, pp. 202-203).

_____ Distributional records of fishes in western Canada (Copeia, no. 2, 1957, pp. 160-161).

SNYDER, L. L. Objectives in museum exhibits (Ontario Historical Society, with News Letter no. 24, June, 1956, Pp. 2).

_____ Arctic birds of Canada (University of Toronto Press, 1957, Pp. 310).

URQUHART, F. A. Collecting insects in winter (Bulletin, Secondary School Teachers' Association, vol. 37, no. 5, 1956, p. 45).

WALKER, E. M. The affinities of the North American species of Gomphus as revealed by the genitalia (Odonata, Gomphidae)(Contribution no. 46, Royal Ontario Museum, Division of Zoology and Palaeontology, 1957, Pp. 24).

WIGGINS, G. B. A revision of the North American caddisfly genus Banksiola (Trichoptera: Phryganeidae)(Contribution no. 43, Royal Ontario Museum, Division of Zoology and Palaeontology, 1956, Pp. 12).

_____ The Kitagamiidae, a family of caddisflies new to North America (Trichoptera)(Contribution no. 44, Royal Ontario Museum, Division of Zoology and Palaeontology, 1956, Pp. 10).

WIGGINS, G. B., R. E. Whitfield and F. A. Walden. Notes on freshwater jellyfish in Ontario. (Contribution no. 45, Royal Ontario Museum, Division of Zoology and Palaeontology, 1957, Pp. 6).

WIGGINS, G. B. and Satoru Kuwayama. The caddisfly genus Oligotricha in Japan with the description of a new species (Contribution no. 47, Royal Ontario Museum, Division of Zoology and Palaeontology, 1957, Pp. 8).